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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/428,125	10/26/1999	VISHNU K. AGARWAL	MI22-1299	4264
21567	7590	10/01/2004	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			ROSE, KIESHA L	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



## DETAILED ACTION

This Office Action is in response to the RCE filed 2 September 2004.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 56 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Roh (U.S. Patent 5,783,253).

Matsuda discloses a capacitor (Fig. 1d), which contains a lower electrode (2) and an upper electrode (4) with two dielectric layers (5,8) formed there between on an entire capacitor dielectric region consisting of essentially the composite of the two dielectric materials. The two dielectric layers are crystalline and since the dielectric layers are made from the same material they will have the characteristics that make the crystalline layers have a lateral shift in grain boundaries from one layer to the other with one of the dielectric layers has a thickness from 10% to 90% of the combined thickness.

Matsuda discloses all of the limitations except for the dielectric materials to be of a titanate compound. Whereas Roh discloses a capacitor (Fig. 1e), which contains a first electrode (4) and a second electrode (8) with two immediately juxtaposed and contacting barium strontium titanate (BST) dielectric layers (6, 7). The two dielectric

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constants are formed of BST because they consist of high dielectric constants, which improve the capacitor device. (Column 3, lines 1-3) Since Matsuda and Roh are both from the same field of endeavor, the purpose disclosed by Roh would have been recognized in the pertinent art of Matsuda. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the capacitor of Matsuda device by incorporating two dielectric layers made of a titanate compound because it has a high dielectric constant which improves the capacitor device as taught by Roh.

Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda and Roh in view of Fujii et al. (U.S. Patent 5,661,319).

Matsuda and Roh disclose all of the limitations except for the dielectric layers to be Ta<sub>2</sub>O<sub>5</sub>. Whereas Fujii discloses a capacitor (Fig. 1) with two dielectric layers formed of Ta<sub>2</sub>O<sub>5</sub>. Instead of the dielectric layers being made both of titanate compounds they can both also be made of tantalum pentoxide. Having both of the dielectric layers made of tantalum pentoxide allows them to act as a diffusion barrier, which prevents the diffusion of silicon into the dielectric film. (Column 3, lines 47-53) Since Matsuda, Roh and Fujii are both from the same field of endeavor, the purpose disclosed by Fujii would have been recognized in the pertinent art of Matsuda and Roh. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the capacitor of Matsuda and Roh by incorporating two dielectric layers made of tantalum pentoxide to prevent the diffusion of silicon into the dielectric film as taught by Fujii.

Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda and Roh as applied to claim 56 above, and further in view of Park et al. (U.S. Patent 5,780,115).

Matsuda and Roh disclose all of the limitations except for one of the electrodes to comprise titanium nitride. Whereas Park discloses a capacitor (Fig. 3) that contains titanium nitride electrodes (15/19) with a dielectric layer (17) therebetween. The electrodes are made of titanium nitride in order to reduce the oxide grown between the electrode and dielectric layer therefore reducing the thickness of the dielectric material. (Column 1, lines 51-65) Since Matsuda, Roh and Park are both from the same field of endeavor, the purpose disclosed by Park would have been recognized in the pertinent art of Matsuda and Roh. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the capacitor of Matsuda and Roh by incorporating one of the electrodes to be titanium nitride to reduce the oxide grown between the electrode and dielectric layer therefore reducing the thickness of the dielectric material as taught by Park.

***Allowable Subject Matter***

Claims 38,42-43 and 46-53 are allowed.

The following is an examiner's statement of reasons for allowance: Claims 38,42-43 and 46-53 are allowable because prior art does not show alone or in combination along with the limitations of the independent claim such as a composite of two immediately juxtaposed and contacting, yet discrete, layers of the identical capacitor

dielectric composition comprising a member selected from the group consisting of a strontium titanate, a strontium bismuth titanate, a lead lanthanate zirconia titanate and a mixture thereof.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

Applicant's arguments with respect to claims 38,42-43,46-53 and 56-59 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 703-605-4212. The examiner can normally be reached on M-F 8:30-6:00 off 2nd Monday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

  
KLR

  
AMIR ZARABIAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800